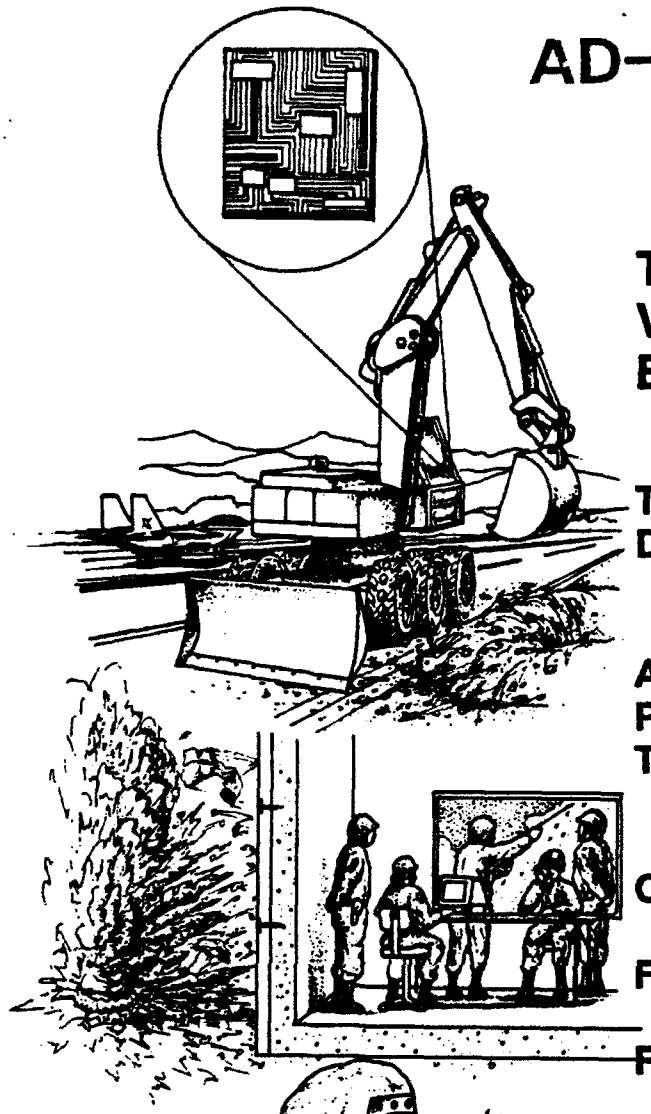

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Volume VII

THE POST-DAM SYSTEM VOLUME VII - TED 1.1 TEXT EDITOR

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OCTOBER 1992

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13. ABSTRACT *(Maximum 200 words)*

Mission accomplishment in PACAF and USAFE depends on base recovery capability in a postattack environment. Base recovery includes identifying, analyzing, and repairing facility damage. For facilities critical to sortie generation, this process must be accomplished expediently.

In a postattack environment, field information on facility damage is collected and analyzed to determine structural integrity and usability. From this analysis, a repair schedule is developed. This is currently a time comsuming process that is shortened by using a computerized system.

The scope of this effort was to develop a computerized postattack damage assessment system that recommends repair strategies, keeps inventory of materials and equipment, and schedules repairs based on manpower and equipment availability.

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EXECUTIVE SUMMARY

A. OBJECTIVE

The objective of this report is to describe the software and hardware of the POST-DAM System, developed by Applied Research Associates, Inc., for airbase facility postattack damage assessment. This report contains descriptions of prototype software and hardware, and recommendations for full-scale development of both software and hardware.

B. BACKGROUND

In a postattack environment, field information on mission-critical facility damage is collected and analyzed to determine structural integrity and usability. From this analysis, a repair schedule is developed. This is a time-consuming process when done without the aid of a computerized system. Consequently, the POST-DAM System was developed to determine repair strategies with an expert system, keep track of materials and equipment with a relational database management system, and schedule repairs based on manpower and equipment availability with a project management system.

C. SCOPE

This technical report consists of nine volumes. Volume I describes software and hardware used with the prototype POST-DAM System, and recommends software and hardware for full-scale development. Volumes II through VIII are software *user's manuals*, which describe how to install and use the prototype software with the POST-DAM System. Volume IX is a field manual that contains diagrams of structures that are used with the POST-DAM system to locate damaged elements.

D. EVALUATION METHODOLOGY

The prototype POST-DAM System was developed using commercial, off-the-shelf (COTS) software and hardware. The system was constructed by integrating the software and hardware in such a way that a remote computer in the field can communicate with a host computer in the Base Civil Engineering (BCE) Damage Control Center (DCC). The POST-DAM system determines repair strategies, keeps track of materials and equipment, and schedules repairs based on manpower and equipment availability. This prototype system has been evaluated in-depth, and subsequent recommendations are made herein about software and hardware that should be used for full-scale development.

E. CONCLUSIONS

The prototype POST-DAM System is functional, but has limitations with respect to both hardware and software. The following problems were encountered:

1. The prototype remote computer is not portable, and cannot be used in the field. No satisfactory, hand-held remote terminal was available for this project.

2. The expert system cannot hold all the information required for full-scale development, because it cannot use extended memory.

3. Both the relational database management system and project management system require more human interaction than desired.

4. The communication system software is not compatible with the Survivable Base Recovery After Attack Communication System (SBCS) being developed for ESD by Sumaria Systems, Inc., with which the POST-DAM System is required to interface.

F. RECOMMENDATIONS

For full-scale development, the following features should be incorporated in the POST-DAM System.

1. Replace the prototype remote computer with a hand-held terminal unit having at least 2 Mb of random access memory, and which can run applications requiring 640 Kb of base memory.

2. Replace the prototype host computer with a system having at least 4 Mb of random access memory, IEEE 802.3 LAN ports, and able to support multi-tasking operations.

3. Replace the CLIPS expert system shell with an expert system shell capable of supporting applications at least twice as large as those developed for the prototype system.

4. Set the host computer up to interface with the IEEE 802.3 Ethernet local area network (LAN) used by SBCS.

5. Construct a single computer program to replace the relational database management system and the project management system, to minimize the required amount of human intervention. This system should be developed by personnel with a strong background in computer science.

PREFACE

This report was prepared by Applied Research Associates, Inc. (ARA), P.O. Box 40128, Tyndall Air Force Base, FL 32403, under Contract F08635-88-C-0067, for the Air Force Civil Engineering Support Agency, Tyndall Air Force Base, Florida.

This report (Volumes I though IX) summarizes work completed between 1 February 1989 and 1 March 1991. Lt. James Underwood (USN) was the HQ AFCESA/RACS Project Officer.

This report has been reviewed by the Public Affairs Office, and is releasable to the National Technical Information Service (NTIS). At NTIS it will be available to the public, including foreign nations.

This technical report has been reviewed and is approved for publication.

Dan Shenbach, Maj., IAF
Project Officer

Felix Uhlik, Lt. Col., USAF
Chief, Engineering Research Division

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Chief, Airbase Survivability Branch

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SECTION 1

INTRODUCTION

1.1 OBJECTIVE

The objective of this software user's manual (SUM) is to explain the procedures for using the TED 1.1 Text Editor with DESQview 386 to edit B(NUMBER).OUT files produced by the POST-DAM Expert System (PDES). Here, NUMBER corresponds to a facility number.

1.2 BACKGROUND

The TED 1.1 Text Editor is shareware software written by Ziff Communications Company. This software is distributed on the PC Magazine Bulletin Board at no cost.

1.3 APPROACH

TED 1.1 is used while the POST-DAM system host computer user is processing PDES data with the POST-DAM Relational Data Base Management System (RDBMS), or after repairs have been scheduled with Harvard Project Manager (HPM). The TED 1.1 editor is used to modify the repair strategy file B(NUMBER).OUT corresponding to the mission-critical facility being considered for expedient repair, if changes have been made to repair strategies, material requirements, or equipment or manpower requirements for that facility. TED 1.1 is also used to modify the repair strategy file, after it has been determined that the facility is beyond expedient repair or repairs have been scheduled by HPM.

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SECTION 2

APPLICABLE DOCUMENTS

2.1 SETA CONTRACT

2.1.1 Postattack Damage Assessment of Facilities, Subtask 2.02, Air Force Engineering and Services Center, SETA Contract F08635-88-C-0067, December 87.

2.1.2 Postattack Damage Assessment of Facilities, Subtask 2.02.1, Air Force Engineering and Services Center, SETA Contract F08635-88-C-0067, October 88.

2.1.3 Postattack Damage Assessment of Facilities, Subtask 2.02.2, Air Force Engineering and Services Center, SETA Contract F08635-88-C-0067, February 89.

2.2 POST-DAM SYSTEM USER'S MANUALS

2.2.1 The POST-DAM System, Volume 1, Introduction to the POST-DAM System, Applied Research Associates, Inc., Report to AFESC/RDCS, March 91.

2.2.2 The POST-DAM System, Volume 2, Software User's Manual for the Expert System, Applied Research Associates, Inc., Report to AFESC/RDCS, February 91.

2.2.3 The POST-DAM System, Volume 3, Software User's Manual for DESQview 386, Applied Research Associates, Inc., Report to AFESC/RDCS, December 90.

2.2.4 The POST-DAM System, Volume 4, Software User's Manual for the Relational Data Base Management System, Applied Research Associates, Inc., Report to AFESC/RDCS, December 90.

2.2.5 The POST-DAM System, Volume 5, Software User's Manual for the Harvard Project Manager, Applied Research Associates, Inc., Report to AFESC/RDCS, December 90.

2.2.6 The POST-DAM System, Volume 6, Software User's Manual for Crosstalk Mk.4 on the Host Computer, Applied Research Associates, Inc., Report to AFESC/RDCS, December 90.

2.2.7 The POST-DAM System, Volume 8, Software User's Manual for Crosstalk Mk.4 on the Remote Computer, Applied Research Associates, Inc., Report to AFESC/RDCS, March 91.

2.2.8 The POST-DAM System, Volume 9, Field Manual of Mission Critical Facilities for Use with the Prototype POST-DAM System, Applied Research Associates, Inc., Report to AFESC/RDCS, March 91.

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SECTION 3

INSTRUCTIONS FOR USE

3.1 INSTALLING THE TED 1.1 TEXT EDITOR

3.1.1 System Configuration

The TED 1.1 Text Editor is designed to run with MS-DOS or PC-DOS 2.0 or higner on the IBM PC, or a 100 percent compatible microcomputer with 512 K random access memory (RAM), either color or monochrome monitor, and 5.25-inch floppy disk drive.

3.1.2 Installing Text Editor Files

TED 1.1 files are copied directly from the single program disk into the **C:\PDAM** subdirectory described in Section 3.1.2 of Document 2.2.4. Starting from the hard disk root directory use the DOS CHANGE DIRECTORY to change to the **C:\PDAM** subdirectory by typing

C:\>cd\pdam [Enter]

Next, copy the files from the single program disk by inserting the disk into floppy disk drive A:, and typing

C:\pdam>copy a:*.* [Enter]

3.2 STARTING THE TED 1.1 TEXT EDITOR

TED 1.1 is executed from DESQview 386, as described in Section 3.4 of Document 2.2.3.

3.3 USING THE TED 1.1 TEXT EDITOR

This section of the SUM tells how to use TED 1.1 to edit PDES repair strategy files.

3.3.1 Options in the TED 1.1 Text Editor

TED 1.1 has ten options. After entering TED 1.1, the user will see the options at the bottom of the screen, as shown in Figure 3.1.

3.3.1.1 Abort

This option lets the user leave TED 1.1 without saving the changes made to an ASCII file. This option is executed by pressing the [F1] key.

3.3.1.2 Undo

This option lets the user undo the last change made to the ASCII file being edited. This option is executed by pressing the [F2] key.

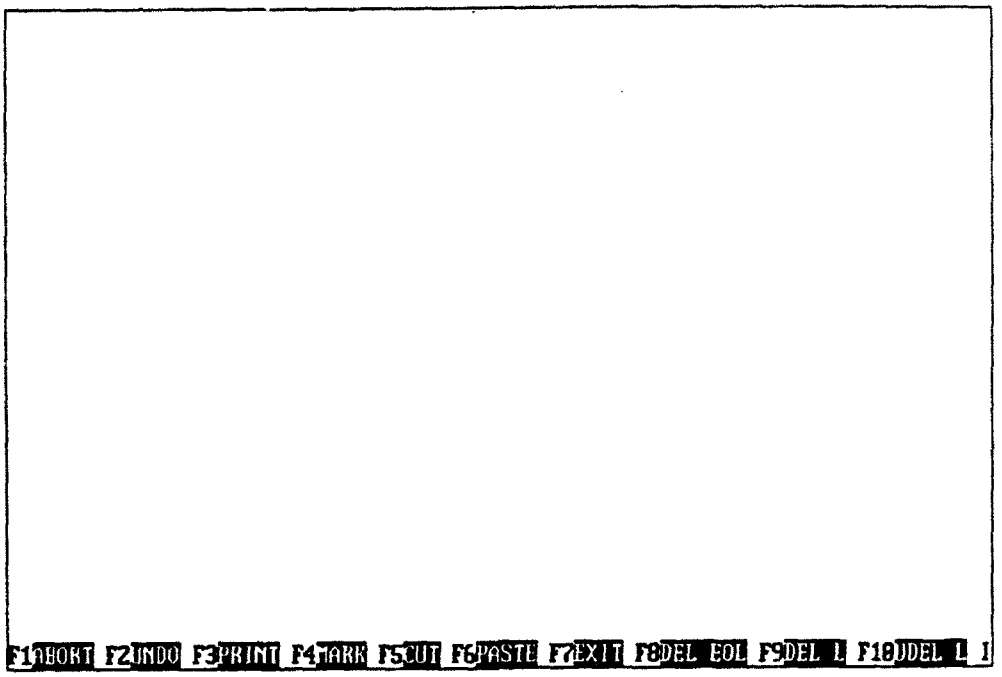

Figure 3.1. Options in the TED 1.1 Text Editor.

3.3.1.3 Print

This option lets the user print the ASCII file being edited. This option is executed by pressing the [F3] key.

3.3.1.4 Mark

This option lets the user mark a block of text in the ASCII file being edited. This option is executed by pressing the [F4] key, and the text is marked by pressing the arrow keys.

3.3.1.5 Cut

This option lets the user cut out a block of text that has been marked in the ASCII file being edited. This option is executed by pressing the [F5] key.

3.3.1.6 Paste

This option lets the user paste a block of text that has been cut out. The block of text is pasted above the curser in the ASCII file being edited. This option is executed by pressing the [F6] key.

3.3.1.7 Exit

This option lets the user exit the TED 1.1 editor, and save the ASCII file being edited. This option is executed by pressing the [F7] key.

3.3.1.8 Del Eol

This option lets the user delete all text to the right of the cursor in the ASCII file being edited. This option is executed by pressing the [F8] key.

3.3.1.9 Del L

This option lets the user delete a line of text in the ASCII file being edited. This option is executed by pressing the [F9] key.

3.3.1.10 Udel L

This option lets the user retain a line that had just been deleted in the ASCII file being edited. This option is executed by pressing the [F10] key.

3.3.2 Selecting a File to Edit

After selecting the Editor Option from DESQview 386, the user is prompted to select a repair strategy file of the form B(NUMBER).OUT to edit, as shown in Figure 3.2.

At the prompt, the user types the file name corresponding to the facility being considered, as shown in Figure 3.3, where facility number one has been used as an example. The user then presses the [Enter] key, and the file appears in the editor, as shown in Figure 3.4.

3.3.3 Editing B(NUMBER).OUT FILES

The B(NUMBER).OUT files, which contain information about damaged, mission-critical facilities, are edited to indicate whether the facility is damaged beyond expedient repair, a repair is not possible, or a repair is not required; the start and finish times of each possible repair; and changes to repair strategies, material requirements, or equipment and manpower requirements.

3.3.3.1 Facilities Beyond Expedient Repair

If a facility is beyond expedient repair, the user types "Beyond Expedient Repair" in the B(NUMBER).OUT file. Using the file B1.OUT as an example, the user enters the file, places the cursor at the end of the "Description" line on the right, using the arrow keys, then presses [Enter]. This opens a new line, and the user types "Beyond Expedient Repair," as shown in Figure 3.5. The user then exits TED 1.1 by pressing the [F7] key, and returns to the POST-DAM RDBMS using DESQview 386, as described in Document 2.2.3.

```
The following is a list of available .OUT files :


 Volume in drive D is DISK1_VOL2
 Directory of  D:\TED

B2       OUT      1638  11-26-90   6:00a
B1       OUT      3185  12-02-90   9:35a
       2 File(s)   3706880 bytes free


Enter the file you wish to modify :
```

Figure 3.2. Prompt to Edit a Repair Strategy File.

```
The following is a list of available .OUT files :


 Volume in drive D is DISK1_VOL2
 Directory of  D:\TED

B2       OUT      1638  11-26-90   6:00a
B1       OUT      3185  12-02-90   9:35a
       2 File(s)   3706880 bytes free


Enter the file you wish to modify : b1.out
```

Figure 3.3. Selecting Facility 1 Repair Strategy File.

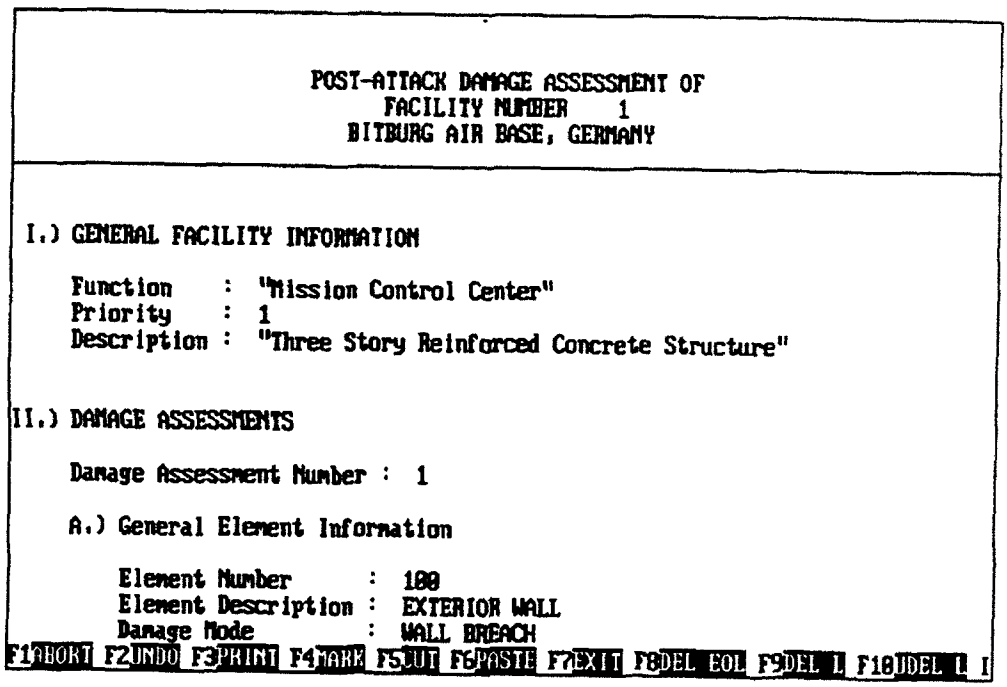

Figure 3.4. File B1.OUT in the TED 1.1 Editor.

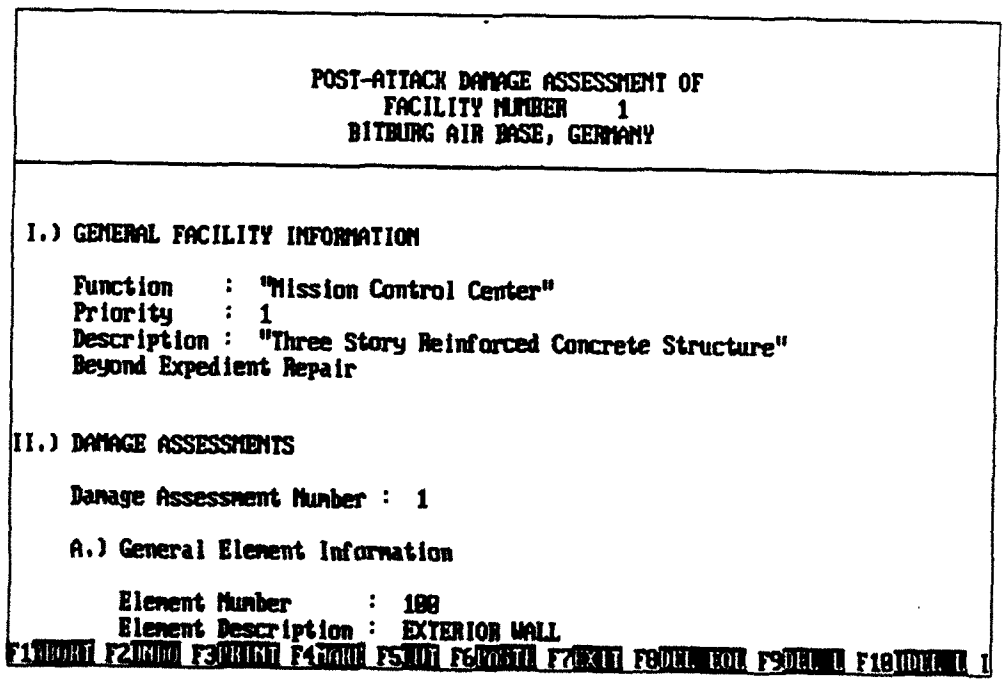

Figure 3.5. Facility Beyond Expedient Repair.

3.3.3.2 Facilities that can be Expediently Repaired

3.3.3.2.1 Particular Repair Not Possible

If it has been determined that a particular repair is not possible, but other expedient repairs to the same facility are both needed and possible, the user types "Repair Not Possible" in the B(NUMBER).OUT file. Using Assessment 1 in the file B1.OUT as an example, the user enters the file, places the cursor at the end of the "Damage Assessment Number" line on the right, using the arrow keys, then presses [Enter]. This opens a new line, and the user types "Repair Not Possible," as shown in Figure 3.6.

3.3.3.2.2 Repair Not Required

If a repair is not required, the user types "Repair Not Required" in the B(NUMBER).OUT file. Using Assessment 1 in the file B1.OUT as an example, the user enters the file, places the cursor at the end of the "Damage Assessment Number" line on the right, using the arrow keys, then presses [Enter]. This opens a new line, and the user types "Repair Not Required," as shown in Figure 3.7.

3.3.3.2.3 Start and Finish Times for Possible Repairs

If a repair is needed and possible, the user types the start and finish times in the B(NUMBER).OUT file. Using Assessment 1 in the file B1.OUT as an example, the user places the cursor at the right of "Start Repair :" using the arrow keys, and types the start date and time (e.g., "9/24/90 9:00"), as shown in Figure 3.8. Next, the user uses the arrow keys to get to the right of "Finish Repair :," and types the finish date and time (e.g., "9/24/90 10:45"), as shown in Figure 3.9.

3.3.3.2.4 Changing a Repair Requirement

If changes are made to repair strategies, material requirements, or equipment or manpower requirements, the user must edit the B(NUMBER).OUT file to reflect these changes. To do this, the user goes to the section where changes have been made, deletes the old data using the function keys, then types in the new data.

3.3.4 Saving B(NUMBER).OUT Files

After editing is complete, the user presses the [F7] function key, and TED 1.1 prompts the user to save the file (e.g., B1.OUT), as shown in Figure 3.10. The user presses [Enter], the file is saved and the user is returned to the program from which TED 1.1 was called.

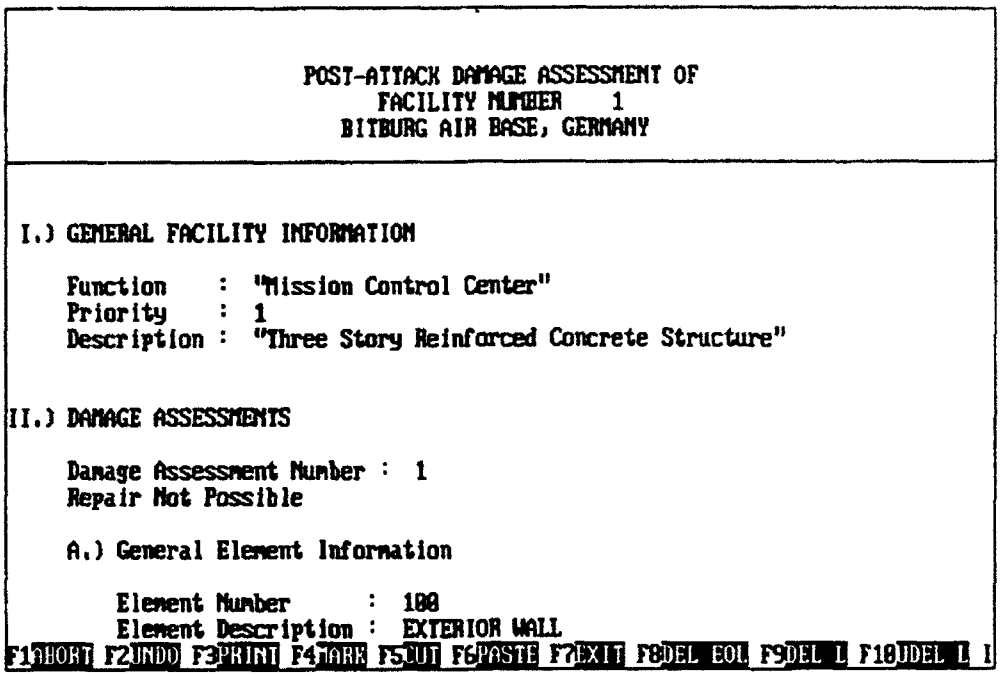

Figure 3.6. Particular Repair Not Possible.

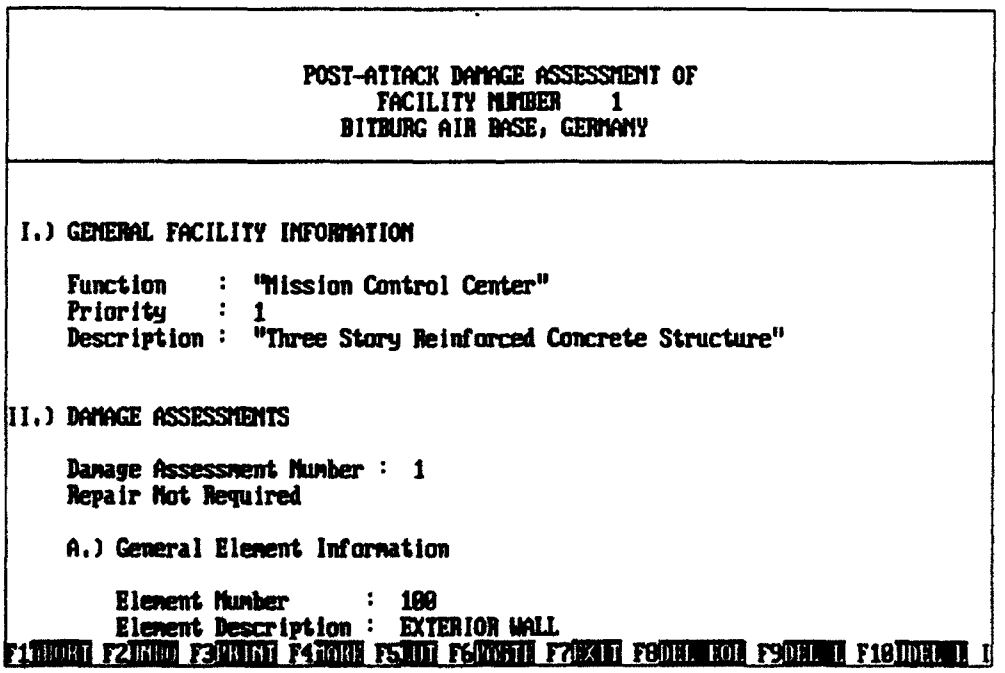

Figure 3.7. Repair Not Required.

```
          2x4                 :   25.0 ft.
          Plywood             :   53.3 sq. ft.
          Wire Mesh           :   32.0 sq. ft.
          Shotcrete           :    1.0 cubic yards
          Water               :   60.0 gallons

      3.) Required Equipment :

          Shotcrete machine             :  1
          Ranset                        :  2
          Repair Team                   :  1

      4.) Estimated Repair Time :

          Repair Team Hours :   1.7

      5.) Remarks               :

          Broken gas lines in the area.

      6.) Start Repair  : 9/24/90  9:00

          Finish Repair :

F1ABORT F2UNDO F3PRINT F4MARK F5CUT F6PASTE F7EXIT F8DEL EOL F9DEL L F10UDEL L I
```

Figure 3.8. Start Repair.

```
          2x4                 :   25.0 ft.
          Plywood             :   53.3 sq. ft.
          Wire Mesh           :   32.0 sq. ft.
          Shotcrete           :    1.0 cubic yards
          Water               :   60.0 gallons

      3.) Required Equipment :

          Shotcrete machine             :  1
          Ranset                        :  2
          Repair Team                   :  1

      4.) Estimated Repair Time :

          Repair Team Hours :   1.7

      5.) Remarks               :

          Broken gas lines in the area.

      6.) Start Repair  : 9/24/90  9:00

          Finish Repair : 9/24/90  10:45

F1ABORT F2UNDO F3PRINT F4MARK F5CUT F6PASTE F7EXIT F8DEL EOL F9DEL L F10UDEL L I
```

Figure 3.9. Finish Repair.

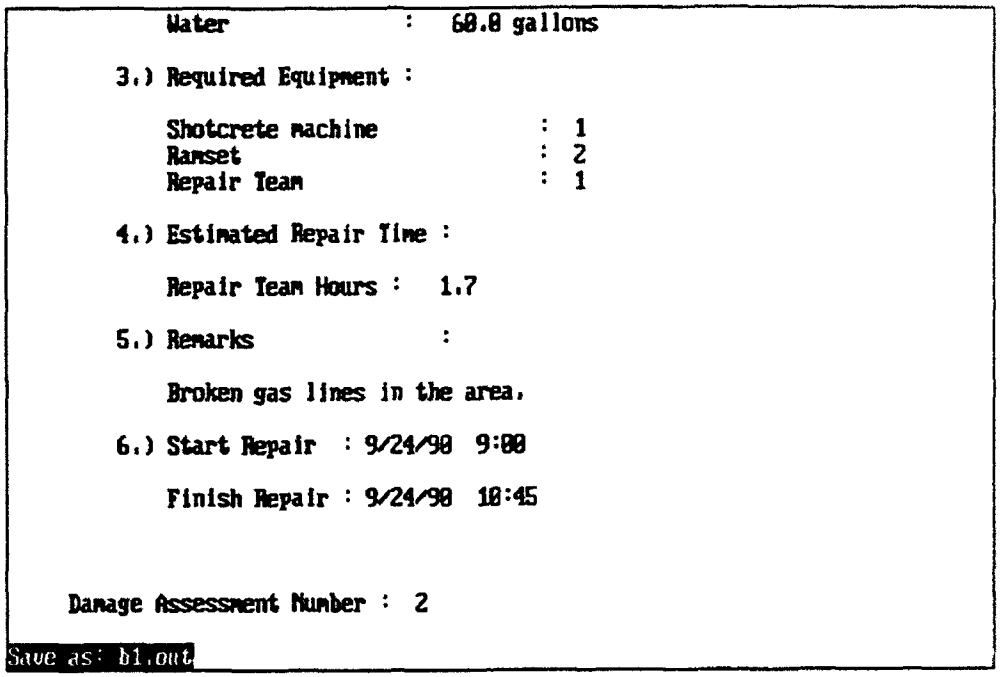

Figure 3.10. Exiting TED 1.1.

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